Listing of All Claims Including Current Amendments

1. (currently amended) A method of producing nitrogenous semiconductor crystal materials of the form $A_XB_YC_ZN_VM_W$ in the nature of strata on a wafer, wherein A, B and C represent elements of elemental group II or group III, N represents nitrogen, M represents an element of elemental group V or group VI, and X, Y, Z, V and W represent the mol fraction of each element in $A_XB_YC_ZN_VM_W$, in a reactor comprising a reaction chamber defined by a set of chamber walls and an upper side and lower side thereof, a first wafer support positioned within the reaction chamber, a gas inlet through which process gases flow into the reaction chamber, a gas mixing system in fluid communication with the reaction chamber, a gas outlet through which the process gases are discharged from the reaction chamber, a second wafer support positioned on the first wafer support, a heating system for heating the first wafer support, and a controller for controlling the process gases and the reaction chamber; the method comprising:

growing a plurality of layers on each other, wherein the composition of the layers differ from each other due to a different composition of the gaseous phase and different growth temperatures inside the reaction chamber;

wherein ~~determining~~ a plurality of temperatures selected from the group consisting of the temperature of the gas inlet, T_1, the temperature of the chamber walls, T_2, the temperature of the first wafer support, T_3, the temperature of the second wafer support, T_4, the temperature of the gas outlet, T_5, the temperature of the gas mixing

system, T_6, the temperature of the upper side of the reaction chamber, T_7, and the temperature of the heating system, T_8 are adjusted by a temperature management system;

wherein the temperature management system uses temperature variation profiles to control the plurality of temperatures and a temporal variation of at least one of the plurality of temperatures;

wherein the temperature variation profiles have been determined on the basis of numeric simulation; and

controlling the temperatures of the gas outlet, T_5, the second wafer support T_4, and the first wafer support, T_3 such that the gas outlet, T_5 is less than the temperature of the second wafer support, T_4, and the temperature of the second wafer support, T_4, is less than the temperature of the first wafer support, T_3;

wherein the temperature adjustment is achieved by active heating, thermal radiation, and cooling.

~~determining the temporal variation of at least one of the plurality of temperatures;~~

~~calculating at least one gradient between a set of temperatures, the set of temperatures selected from the group consisting of the temperatures of the gas outlet and the wafer supports, the temperatures of the gas mixing system and the gas inlet, and the temperatures of the upper side of the reaction chamber and the first wafer support;~~

~~controlling the plurality of temperatures, using the determined plurality of temperatures and the determined at least one temporal variation in correspondence with a plurality of numerically simulated temperature variation profiles; and~~

~~controlling process parameters in the reaction chamber.~~

2. (currently amended) The method according to Claim 1 ~~wherein controlling the plurality of temperatures comprises~~ further comprising controlling the temperature of the gas inlet, T_1, so as to be below a condensation temperature of the process gases.

3. (currently amended) The method according to Claim 1 ~~wherein controlling the plurality of temperatures comprises~~ further comprising controlling the temperature of the chamber walls, T_2, so as to be equal to the temperature of the first wafer support, T_3.

4. (currently amended) The method according to Claim 1 wherein the step of controlling the ~~plurality of~~ temperatures comprises controlling the temperature of the first wafer support, T_3, as a constant temperature.

5. (currently amended) The method according to Claim 1 wherein the step of controlling the ~~plurality of~~ temperatures comprises controlling the temperature of the second wafer support, T_4, in correspondence with the temperature of the first wafer support, T_3.

6. (cancelled).

7. (currently amended) The method according to Claim 1 ~~wherein controlling the plurality of temperatures comprises~~ further comprising controlling the temperature of the gas mixing system, T_6, as a constant temperature smaller than the temperature of the gas inlet, T_1.

8. (currently amended) The method according to Claim 1 ~~wherein controlling the plurality of temperatures comprises~~ further comprising controlling the temperature of the upper side of the reaction chamber, T_7, as a constant temperature in correspondence with the temperature of the first wafer support, T_3.

9. (currently amended) The method according to Claim 1 ~~wherein controlling the plurality of temperatures comprises~~ further comprising controlling the temperature of the heating system, T_8, as a constant temperature in correspondence with the temperature of the first wafer support, T_3.

10. (currently amended) The method according to Claim 1 ~~wherein controlling the plurality of temperatures comprises~~ further comprising controlling a temperature-dependent gas flow variation.

11. (currently amended) The method according to Claim 1 ~~wherein controlling the plurality of temperatures comprises~~ further comprising controlling a temperature-dependent total pressure variation in the reaction chamber.

12. (currently amended) The method according to Claim 1 ~~wherein controlling the plurality of temperatures comprises~~ further comprising controlling a temperature-dependent principal carrier gas variation in the reaction chamber.

13. (currently amended) The method according to Claim 1 ~~wherein controlling the plurality of temperatures comprises~~ further comprising controlling temperature-dependent interrupts in the production process.

14. (previously presented) The method according to Claim 1 further comprising applying the semiconductor materials to be produced on a mechanical carrier of a semiconductor of group IV, a semiconductor of groups III-V, oxides or any other material resistant to temperatures and the process gases.

15. (previously presented) The method according to Claim 14 further comprising pre-treating said mechanical carrier by applying lines, dots, or by carrying out other steps for surface treatment, or by partially covering the surface with other materials or material components.

16. (previously presented) The method according to Claim 1 further comprising a two-stage application of pre-processed $A_XB_YC_ZN_VM_W$ materials.

17. (previously presented) The method according to Claim 1 wherein controlling the plurality of temperatures comprises employing a temperature-controlled injector.

18. (cancelled).

19. (currently amended) The method of Claim 4 ~~wherein controlling the plurality of temperatures comprises~~ comprising controlling the temperature of the first wafer support, T_3, up to about 1600 degrees centigrade.

20. (currently amended) The method of Claim 19 ~~wherein controlling the plurality of temperatures comprises~~ comprising controlling the temperature of the first wafer support, T_3, with temperature variations of up to 250 degrees per minute.

21. (currently amended) The method of Claim 4 ~~wherein controlling the plurality of temperatures comprises~~ comprising controlling the temperature of the first wafer support to an accuracy of 0.1 degrees centigrade.

22-59. (cancelled).